

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor	: Laurence Lee et al.	
Appln. No.	:	
Filed	: Herewith	Group Art Unit:
Title	: APPARATUS AND PROCESS FOR COATING PARTICLES	Examiner:
Docket No.	: P430.12-0002	

PRELIMINARY AMENDMENT

SENT VIA EXPRESS MAIL

Assistant Commissioner for Patents
Washington, D.C. 20231

Express Mail No.: EL800725580US

Sir:

IN THE CROSS-REFERENCE TO RELATED APPLICATION(S)

Add paragraph on page 1, line 1, "Cross-Reference to Related Application" This application is a divisional of Application No. 09/461,525, filed December 14, 1999, which is based on provisional patent Application No. 60/112,170.

IN THE CLAIMS

Please amend claim13, (marked up version attached in Appendix) add new claims 26-30 and cancel claims 1-12 and 20-25, such that pending claims 13-19 and 26-30 are as follows:

13. (Amended) A process for coating particles comprising:

providing an insert within an upward flowing fluid bed dryer or granulator with a screen across the bottom of the dryer or granulator, the insert comprising a vertically adjustable cylindrical partition located substantially on a vertical axis of the granulator or dryer, a spray nozzle with a heated liquid line and an atomizing gas line connected thereto which is positioned such that a liquid is sprayed within the adjustable cylindrical partition, the spray nozzle being

positioned in a non-heat conducting relation to the bottom screen, the spray nozzle being located substantially on the vertical axis;

loading the dryer with a bed of particles;

adjusting the cylindrical partition such that the position of the top of the cylindrical partition is above the bed of particles and product can be removed from the dryer;

adjusting the spray nozzle such that a spray zone is created within the cylindrical partition;

providing a gas to fluidize the bed of particles through the bottom screen;

providing an atomizing gas which is processed through the spray nozzle;

providing a liquid which is atomized through the spray nozzle;

contacting the particles with the liquid from the spray nozzle within the cylindrical partition and spray zone;

drying the particles in an area outside the partition; and

circulating the particles from the fluidized bed up through the cylindrical partition, down through the drying zone and back into the fluidized bed until a selected amount of liquid is coated onto the particles.

14. The process of claim 13 wherein the liquid is provided for coating particles.
15. The process of claim 13 wherein the liquid is provided to agglomerate the particles.
16. The process of claim 14 wherein the liquid for coating the particles includes a liquid fat or hot melt.
17. The process of claim 13 wherein the cylindrical partition has a diameter to length ratio greater than or equal to 1.

18. The process of claim 13 wherein the spray nozzle is adjustable along the vertical axis such that the top of the nozzle is positionable within the cylindrical partition or below the bottom edge of the cylindrical partition.
19. The process of claim 13 wherein an inlet air temperature, a product temperature, a spray liquid temperature, a spray nozzle temperature, an atomizing air temperature, a spray liquid line temperature, a coating zone temperature, a fluidizing gas flow, and atomizing gas pressure are monitored.
26. (New) A process for coating particles comprising:
providing a cylindrical insert whose central axis is disposed in a vertical direction within an upward flowing fluid bed dryer such that fluidized particles within the fluid bed dryer travel upwardly through the insert, and a spray nozzle supplied with heated liquid such that a liquid is sprayed within the cylindrical insert, and the spray nozzle being disposed in a non-heat conducting relation with regard to a bottom screen within the fluid bed dryer, the spray nozzle being located substantially along the central axis of the cylindrical insert;
loading the dryer with particles to be coated;
adjusting the cylindrical partition's vertical position within the fluid bed dryer;
adjusting the spray nozzle such that a spray zone is created within the cylindrical insert;
fluidizing the particles with a gas stream in an upward direction such that particles travel through the cylindrical insert;
providing an atomized liquid through the spray nozzle to coat the particles within the cylindrical insert;
permitting the particles to dry outside of the cylindrical partition; and

recirculating the particles through the cylindrical insert until a selected amount of liquid is coated onto the particles.

27. (New) The process of claim 26 wherein the liquid for coating the particle includes a liquid fat or hot melt.

28. (New) The process of claim 26 wherein the spray nozzle is positionable within the cylindrical insert or below the bottom edge of the cylindrical insert.

29. (New) The process of claim 13 wherein the cylindrical insert is positioned so that coated particles can be withdrawn from the dryer without having to remove the insert.

30. (New) A method for coating particles within a dryer that is capable of fluidizing a bed of particles, the method comprising:

positioning a cylindrical partition having an axis extending concentrically therein such that the axis is disposed vertically with respect to upward flow of gas through the cylindrical partition creating a coating zone within the partition and above the partition and a drying zone outside of the coating zone;

positioning a spray nozzle along the axis of the cylindrical partition for spraying a coating solution onto the particles such that the spray from the nozzle coats the particles within the partition and in an area above the partition;

fluidizing the bed of particles such that particles flow through the partition in an upward fashion for coating and travel upwardly and outside of the coating zone and then downwardly settling outside of the partition and coating zone for drying creating a coating cycle; and

repeating the coating cycle until a selected amount of coating is placed onto the particle.

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REMARKS

Entry of this Preliminary Amendment is respectfully requested.

This Preliminary Amendment cancels claims 1-12 directed to the apparatus, and amends independent claim 13 to correct ambiguities in the claim language but not in view of any prior art. New claims 26-30 have been added and are believed to be patentable.

It is requested that all of the claims in the application be given a Notice of Allowance.

Respectfully submitted,

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Date:

July 27, 2001

By


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**APPENDIX:
MARKED UP VERSION OF SPECIFICATION AND CLAIM AMENDMENTS**

13. (Amended) A process for coating particles comprising:

providing an insert within an upward flowing fluid bed dryer or granulator with a screen across the bottom of the dryer or granulator, the insert comprising a vertically adjustable cylindrical partition located substantially on a vertical axis of the granulator or dryer, a spray nozzle with a heated liquid line and an atomizing gas line connected thereto which is positioned such that a liquid is sprayed within the adjustable cylindrical partition, the spray nozzle being positioned in a non-heat conducting relation to the bottom screen, the spray nozzle being located substantially on the vertical axis;

loading the dryer with a bed of particles;

adjusting the cylindrical partition such that the position of the top of the cylindrical partition is above the bed of particles and product [container] can be removed [out] from the dryer;

adjusting the spray nozzle such that a spray zone is created within the cylindrical partition;

providing a gas to fluidize the bed of particles through the bottom screen;

providing an atomizing gas which is processed through the spray nozzle;

providing a liquid which is atomized through the spray nozzle;

contacting the particles with the liquid from the spray nozzle within the cylindrical partition and [coating] spray zone;

drying the particles [in the reconditioning zone] in an area outside the partition;

and

circulating the particles from the fluidized bed up through the cylindrical partition, down through the drying zone and back into the

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fluidized bed until a selected amount of liquid is coated onto the particles.

26. (New) A process for coating particles comprising:
- providing a cylindrical insert whose central axis is disposed in a vertical direction within an upward flowing fluid bed dryer such that fluidized particles within the fluid bed dryer travel upwardly through the insert, and a spray nozzle supplied with heated liquid such that a liquid is sprayed within the cylindrical insert, and the spray nozzle being disposed in a non-heat conducting relation with regard to a bottom screen within the fluid bed dryer, the spray nozzle being located substantially along the central axis of the cylindrical insert;
- loading the dryer with particles to be coated;
- adjusting the cylindrical partition's vertical position within the fluid bed dryer;
- adjusting the spray nozzle such that a spray zone is created within the cylindrical insert;
- fluidizing the particles with a gas stream in an upward direction such that particles travel through the cylindrical insert;
- providing an atomized liquid through the spray nozzle to coat the particles within the cylindrical insert;
- permitting the particles to dry outside of the cylindrical partition; and
- recirculating the particles through the cylindrical insert until a selected amount of liquid is coated onto the particles.

27. (New) The process of claim 26 wherein the liquid for coating the particle includes a liquid fat or hot melt.

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28. (New) The process of claim 26 wherein the spray nozzle is positionable within the cylindrical insert or below the bottom edge of the cylindrical insert.

29. (New) The process of claim 13 wherein the cylindrical insert is positioned so that coated particles can be withdrawn from the dryer without having to remove the insert.

30. (New) A method for coating particles within a dryer that is capable of fluidizing a bed of particles, the method comprising:

positioning a cylindrical partition having an axis extending concentrically therein such that the axis is disposed vertically with respect to upward flow of gas through the cylindrical partition creating a coating zone within the partition and above the partition and a drying zone outside of the coating zone;

positioning a spray nozzle along the axis of the cylindrical partition for spraying a coating solution onto the particles such that the spray from the nozzle coats the particles within the partition and in an area above the partition;

fluidizing the bed of particles such that particles flow through the partition in an upward fashion for coating and travel upwardly and outside of the coating zone and then downwardly settling outside of the partition and coating zone for drying creating a coating cycle; and

repeating the coating cycle until a selected amount of coating is placed onto the particle.

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